REMARKS/ARGUMENTS

Claims 1-2, 4-9, 11-18, 20-29 and 36-46 are pending in the present application. Claims 1, 2, 4, 5, 8, 9, 11-14, 17, 18 and 20-23 have been currently amended. Claims 3, 10, 19 and 30-35 were previously canceled in prior amendments. New claims 44-46 have been added. Support for the amended and new claims can be found throughout the specification and in the original claims. Particular support for amended Claims 1, 8 and 17 can be found in the respective original claims, and on page 24 of the specification. Particular support for amended Claims 2, 4, 5, 9, 11-14, 18 and 20-23 can be found in the respective original claims. Particular support for new Claims 44-46 can be found on pages 19, 33-37 and 39-45 of the specification. No new matter is believed to have been introduced by the amended and new claims.

Applicants respectfully request that the Examiner acknowledge the reference submitted in an Information Disclosure Statement filed on November 17, 2003, by sending to Applicants' undersigned representative, an initialed and signed copy of the corresponding PTO-1449 form. Applicants also request that the Examiner acknowledge the related case submitted in an Information Disclosure Statement filed on July 1, 2002, by sending to Applicants' undersigned representative, an initialed and signed copy of the corresponding "List of Related Cases" form.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected Claims 1, 2, 4-9, 11-29 and 36-43 under 35 U.S.C. § 103(a), as unpatentable over U.S. 6,124,454 to Ikeda et al. (hereinafter Ikeda), in view of U.S. 5,892,065 Tsukamoto et al. (hereinafter Tsukamoto). Applicants note that Claims 3 and 19 were canceled in prior amendments. Applicants respectfully traverse for the following reasons.

Pending Claim 1 recites a process for producing β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals, comprising:

(A) reacting cyanuric acid with epichlorohydrin to form an addition product of cyanuric acid and epichlorohydrin, and dehydrochlorinating said product to obtain a reaction solution containing tris-(2,3-epoxypropyl)-isocyanurate,

(B) removing epichlorohydrin from said reaction solution, and dissolving tris-(2,3-epoxypropyl)-isocyanurate in an organic solvent, wherein said solvent is acetonitrile, toluene, dioxane or dimethylformamide, to form a solution,

(C) gradually cooling the solution of (B) at a cooling rate of at most 20°C/hr for crystallization, and filtering to obtain crystals, and

(D) washing and drying said crystals, wherein said crystals have a remaining epichlorohydrin content of at most 100 ppm.

Applicants note that pending Claims 8 and 17 contain similar recitals, and vary in process step (C). The present claims are drawn to a process, not to a product. The claims are rendered obvious, only if the cited references teach or suggest the same process. Whether or not the same product results from two processes is irrelevant, if the processes at issue are different.

Ikeda is directed to the formation of β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals (see Abstract). Ikeda discloses that in the formation of the crystals, the reaction solution containing the tris-(2,3-epoxypropyl)-isocyanurate crystals is adjusted to a solid content concentration of 10 to 50 wt %, by concentration or dilution to a concentration suitable for crystallization (for example, see column 3, lines 58-60; and column 6, lines 39-

51). Seed crystals are then added, and the temperature is controlled to allow for crystal growth (for example, see column 3, line 61 to column 4, line 2). Ikeda discloses a means for determining the temperature for forming a saturated solution, by evaporating the reaction solution to dryness, at 120°C and under 2 Torr, to obtain tris-(2,3-epoxypropyl)-isocyanurate, which is pulverized to obtain a powder, and adjusted to a predetermined solid concentration with epichlorohydrin (see column 7, lines 9-19).

Ikeda does not teach or suggest a process to produce β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals, wherein epichlorohydrin is removed from the reaction solution, and the resulting tris-(2,3-epoxypropyl)-isocyanurate is dissolved in acetonitrile, toluene, dioxane or dimethylformamide, in combination with the other features recited in Claim 1. Ikeda discloses that an organic solvent can be used to wash the crystals obtained by filtration, and provides examples of such organic solvent, including methanol, ethanol, isopropylalcohol, methyl ethyl ketone, acetronitrile, dimethylformamide and epichlorohydrin (see column 8, lines 54-67). Washing crystals is not the same as dissolving crystals. The main objective of a wash is to remove surface impurities, and ideally not to dissolve the crystals. Ikeda does not teach or suggest the removal of the epichlorohydrin, and the dissolution of the resulting tris-(2,3-epoxypropyl)-isocyanurate in acetonitrile, toluene, dioxane or dimethylformamide, as recited in Claim 1.

Tsukamoto discloses 2,3-epoxypropyl derivatives or 2-methyl-2,3-epoxypropyl derivatives of compounds having carboxyl groups or amido groups, and methods of producing such compounds (see Abstract and column 3, line 41 to column 4, line 27). This reference discloses the evaporation (step (D)) of epihalohydrin or 2-methyl-epihalohydrin in a refined liquid obtain from a prior washing step (for example, see column 4, lines 23-27;

column 15, line 44 to column 18, line 21). Tsukamoto discloses that after step (D), the recovered product can be further purified by recrystallization (step (E)). Tsukamoto discloses that methanol, ethanol, propanol, methyl ethyl ketone, ethyl acetate, benzene, toluene, or a mixture thereof, may be used to dissolve the product in step (E) (see column 19, lines 2-9, and Claim 20). Tsukamoto discloses a reaction product of cyanuric acid and epichlorohydrin, and in which the product is crystallized from methanol (see Examples 6, 13, 15, 24, 27 and 28 and Comparative Examples 2 and 3 of Tsukamoto).

Tsukamoto does not teach or suggest a process for producing β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals, in combination with the other features recited in Claim 1. Tsukamoto does not disclose a β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals, and therefore cannot teach the processes of the present invention. In addition, Tsukamoto does not teach or suggest removing epichlorohydrin from a reaction solution containing tris-(2,3-epoxypropyl)-isocyanurate, and dissolving the resulting product in an organic solvent, wherein said solvent is acetonitrile, toluene, dioxane or dimethylformamide, in combination with the other features recited in Claim 1. Tsukamoto discloses, in general, that recovered product can be further purified by recrystallization (step (E)), and that methanol, ethanol, propanol, methyl ethyl ketone, ethyl acetate, benzene, toluene, or a mixture thereof, can be used to dissolve the product. However, this reference does not teach or suggest the specific combination of crystallizing the product, tris-(2,3-epoxypropyl)-isocyanurate, in an organic solvent, wherein said solvent is acetonitrile, toluene, dioxane or dimethylformamide. The selection and choices to be made in order to arrive at the recited claims, cannot be determined from among the broad teachings

of Tsukamoto. No guidelines for the combination of claimed features are provided by this reference, and, in fact, Tsukamoto teaches a crystallization of the reaction product of epichlorohydrin and cyanuric acid from methanol, as shown by the examples (see Examples 6, 13, 15, 24, 27 and 28 and Comparative Examples 2 and 3 of Tsukamoto).

Therefore, Tsukamoto does not overcome the deficiencies of Ikeda, and the combination of these references does not teach or suggest the pending Claims 1, 8 and 17.

Moreover, Applicants have further provided, herewith, a Declaration under C.F.R. § 1.132, showing that when a chlorine-free solvent is used to crystallize the tris-(2,3-epoxypropyl)-isocyanurate product, as recited in pending Claim 1 (see Example 1 of the Declaration) a markedly reduced total chlorine amount results in the final crystals, compared to a crystallization from a chlorine-containing solvent (see Comparative Example 2 in the Declaration). Applicants note that final products containing residual chlorinated hydrocarbons, used as organic solvents, are not suitable for applications for electronic materials (see specification, page 4, line 5 to page 6, line 2). The choice of solvent is important for several reasons, not the least of which, is the total remaining chlorine content in the crystals. A high chlorine content results in an unacceptable product for electronic applications. The improvement shown in Example 1 is not taught or suggested in the aforementioned references, and the combination of these references. Applicants note that Tsukamoto does not teach or suggest a process for producing β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals, and that Ikeda discloses such crystal formation in an epichlorohydrin based reaction solution (see Examples 1-14 and Comparative Examples 1-8), that results in significantly higher remaining epichlorohydrin content than as claimed in the present invention. In addition, one of skill in the art would not have been motivated by

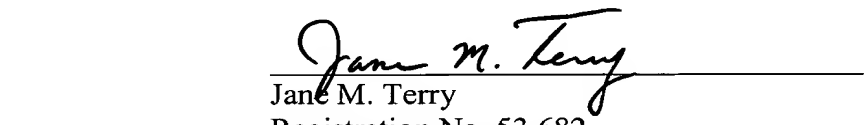
the combination of these references to prepare the product by the process of the claimed invention, since the combination of these references does not teach or suggest a process for producing β-form tris-(2,3-epoxypropyl)-isocyanurate crystals containing from 2 to 15 wt% of α-form tris-(2,3-epoxypropyl)-isocyanurate in the interior of the crystals, as recited in the pending claims.

Therefore, for at least the above reasons, the combination of Ikeda and Tsukamoto does not teach or suggest the invention as now claimed, and the rejection should be withdrawn.

Applicants respectfully submit that the present amendment now places all claims in condition for allowance, and request early notice of such action.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Jane M. Terry
Registration No. 53,682

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 06/04)